

Abstract

The resistance of maize grain (*Zea mays* L.) to the stored insect pest, *Sitophilus zeamais*, was investigated in relation to the grain content of two groups of phytochemicals. The distribution of hydroxycinnamic acid amide conjugates (HAACs) in Mexican landraces was investigated and the toxicity of the HAACs in maize grain versus *S. zeamais* was examined by short-term feeding bioassays and a two-generation life cycle. Results suggest that the HAACs are not an effective defence compound against *S. zeamais*, but may be effective against generalist feeders.

The function of cell wall bound phenylpropanoids to *S. zeamais* resistance in a collection of maize grain with variable post-harvest resistance and in a Quantitative Trait Locus (QTL) mapping population was examined. Correlational data suggest that diferulic acid content is an important resistance factor. Evidence was found for nine chromosomal locations where QTLs for cell wall bound phenylpropanoid content correspond with QTLs for insect resistance. These results indicate a defence against grain attack by *S. zeamais* mediated by cell wall bound phenylpropanoids.